

- (2) a wire grid polarization beamsplitter for receiving said polarized beam of light, for transmitting said polarized beam of light having a first polarization, and for reflecting said polarized beam of light having a second polarization orthogonal to said first polarization, wherein subwavelength wires on said wire grid polarization beamsplitter face a reflective liquid crystal device;
- (3) wherein said reflective liquid crystal device receives said polarized beam of light, having either a first polarization or a second polarization, and selectively modulates said polarized beam of light to encode image data thereon, providing both modulated light and unmodulated light which differ in polarization;
- (4) wherein said reflective liquid crystal device reflects back both said modulated light and said unmodulated light to said wire grid polarization beamsplitter;
- (5) wherein a polarization compensator, located between said wire grid polarization beamsplitter and said reflective liquid crystal device, is provided for conditioning oblique and skew light rays;
- (6) wherein said wire grid polarization beamsplitter separates said modulated light from said unmodulated light;
- (7) wherein a polarization analyzer receives said modulated light, and which further removes any residual unmodulated light from said modulated light;

(d) a recombination prism for combining said image bearing color light beams corresponding to each of said color beams of light, into a full color image bearing beam; and

(e) a projection lens system for projecting said full color image bearing beam onto said display surface; and

wherein said pre-polarizer and said polarization analyzer in any of said modulation optical systems corresponding to a given color have different polarization properties from one another.

70. (New) An electronic projection apparatus according to claim 69 wherein said pre-polarizer is a MacNielle type prism and said polarization analyzer is a wire grid polarizer.

71. (New) An electronic projection apparatus according to claim 69 wherein said pre-polarizer and said polarization analyzer are both wire grid polarizers.

72. (New) An electronic projection apparatus as in claim 69 wherein said reflective liquid crystal device receives said polarized beam of light having a first polarization, as was transmitted through said wire grid polarization beamsplitter.

73. (New) An electronic projection apparatus as in claim 69 wherein said reflective liquid crystal device receives said polarized beam of light having a second polarization, as was reflected from said wire grid polarization beamsplitter.

74. (New) An electronic projection apparatus for projection of color images onto a display surface, said apparatus comprising:

- (a) a light source which produces a beam of light;
- (b) an optical system which separates said beam of light into separate color beams of light, and which provides beam shaping and focusing of said color beams of light;
- (c) a modulation optical system for each of said color beams of light, said modulation optical system providing an image bearing color light beam, and said modulation optical system comprising:
 - (1) a prepolarizer for prepolarizing one of said colored beams of light to provide a polarized beam of light

- (2) a wire grid polarization beamsplitter for receiving said polarized beam of light, for transmitting said polarized beam of light having a first polarization, and for reflecting said polarized beam of light having a second polarization orthogonal to said first polarization, wherein subwavelength wires on said wire grid polarization beamsplitter face a reflective spatial light modulator;
- (3) wherein said reflective spatial light modulator receives said polarized beam of light, having either a first polarization or a second polarization, and selectively modulates said polarized beam of light to encode image data thereon, providing both modulated light and unmodulated light which differ in polarization;
- (4) wherein said reflective spatial light modulator reflects back both said modulated light and said unmodulated light to said wire grid polarization beamsplitter;
- (5) wherein said wire grid polarization beamsplitter separates said modulated light from said unmodulated light;
- (6) wherein a polarization analyzer receives said modulated light, and which further removes any residual unmodulated light from said modulated light;

(d) a recombination prism for combining said image bearing color light beams corresponding to each of said color beams of light, into a full color image bearing beam;

(e) a projection lens system for projecting said full color image bearing beam onto said display surface; and

wherein said pre-polarizer and said polarization analyzer in any of said modulation optical systems corresponding to a given color have different polarization properties from one another.

75. (New) An electronic projection apparatus according to claim 74 wherein said pre-polarizer is a MacNielle type prism and said polarization analyzer is a wire grid polarizer.

76. (New) An electronic projection apparatus according to claim 74 wherein said pre-polarizer and said polarization analyzer are both wire grid polarizers.

77. (New) An electronic projection apparatus as in claim 74 wherein said reflective spatial light modulator receives said polarized beam of light having a first polarization, as was transmitted through said wire grid polarization beamsplitter.

78. (New) An electronic projection apparatus as in claim 74 wherein said reflective spatial light modulator receives said polarized beam of light having a second polarization, as was reflected from said wire grid polarization beamsplitter.

79. (New) A modulation optical system for providing modulation of an incident light beam comprising:

(a) a prepolarizer for pre-polarizing said beam of light to provide a polarized beam of light;

(b) a wire grid polarization beamsplitter for receiving said polarized beam of light, for transmitting said polarized beam of light having a first polarization, and for reflecting said polarized beam of light having a second polarization orthogonal to said first polarization, wherein subwavelength wires on said wire grid polarization beamsplitter face a reflective spatial light modulator;

(c) wherein said reflective spatial light modulator receives said polarized beam of light, having either a first polarization or a second polarization, and selectively modulates said polarized beam of light to encode data thereon, providing both modulated light and unmodulated light which differ in polarization;

(d) wherein said reflective spatial light modulator reflects back both said modulated light and said unmodulated light to said wire grid polarization beamsplitter;

(e) wherein a polarization compensator, located between said wire grid polarization beamsplitter and said reflective liquid crystal device, is provided for conditioning oblique and skew light rays;

(f) wherein said wire grid polarization beamsplitter separates said modulated light from said unmodulated light;

(g) a polarization analyzer receives said modulated light, and which further removes any residual unmodulated light from said modulated light; and

wherein said pre-polarizer and said polarization analyzer in said modulation optical system have different polarization properties from one another.

80. (New) A modulation optical system according to claim 79 wherein said pre-polarizer is a MacNielle type prism and said polarization analyzer is a wire grid polarizer.

81. (New) A modulation optical system according to claim 79 wherein said pre-polarizer and said polarization analyzer are both wire grid polarizers.

82. (New) A modulation optical system as in claim 79 wherein said reflective spatial light modulator receives said polarized beam of light having a first polarization, as was transmitted through said wire grid polarization beamsplitter.

83. (New) A modulation optical system as in claim 79 wherein said reflective spatial light modulator receives said polarized beam of light having a second polarization, as was reflected from said wire grid polarization beamsplitter.

84. (New) A modulation optical system for providing modulation of an incident light beam comprising:

- (a) a prepolarizer for pre-polarizing said beam of light to provide a polarized beam of light;
- (b) a wire grid polarization beamsplitter for receiving said polarized beam of light, for transmitting said polarized beam of light having a first polarization, and for reflecting said polarized beam of light having a second polarization orthogonal to said first polarization, wherein subwavelength wires on said wire grid polarization beamsplitter face a reflective spatial light modulator;
- (c) wherein said reflective spatial light modulator receives said polarized beam of light, having either a first polarization or a second polarization, and selectively modulates said polarized beam of light to encode data thereon, providing both modulated light and unmodulated light which differ in polarization;
- (d) wherein said reflective spatial light modulator reflects back both said modulated light and said unmodulated light to said wire grid polarization beamsplitter;
- (e) wherein said wire grid polarization beamsplitter separates said modulated light from said unmodulated light;
- (f) a polarization analyzer receives said modulated light, and which further removes any residual unmodulated light from said modulated light; and

wherein said pre-polarizer and said polarization analyzer in said modulation optical system have different polarization properties from one another.

85. (New) A modulation optical system according to claim 84 wherein said pre-polarizer is a MacNielle type prism and said polarization analyzer is a wire grid polarizer.

86. (New) A modulation optical system according to claim 84 wherein said pre-polarizer and said polarization analyzer are both wire grid polarizers.

87. (New) A modulation optical system as in claim 84 wherein said reflective spatial light modulator receives said polarized beam of light having a first polarization, as was transmitted through said wire grid polarization beamsplitter.

88. (New) A modulation optical system as in claim 84 wherein said reflective spatial light modulator receives said polarized beam of light having a second polarization, as was reflected from said wire grid polarization beamsplitter.

89. (New) A modulation optical system for providing modulation of an incident beam of light comprising:

(a) a wire grid polarization beamsplitter for receiving said beam of light and providing a polarized beam of light, by nominally transmitting the portion of said beam of light having a first polarization, and for nominally reflecting the portion of said beam of light having a second polarization orthogonal to said first polarization, wherein subwavelength wires on said wire grid polarization beamsplitter face a reflective spatial light modulator;

(b) wherein said reflective spatial light modulator receives said polarized beam of light, having either a first polarization or a second polarization, and then selectively modulates said polarized beam of light to encode data thereon, providing both modulated light and unmodulated light which differ in polarization;

(c) wherein said reflective spatial light modulator reflects back both said modulated light and said unmodulated light to said wire grid polarization beamsplitter;

(d) wherein said wire grid polarization beamsplitter separates said modulated light from said unmodulated light; and

(e) wherein said modulation optical system further comprises at least a second wire grid polarizer, which is either a pre-polarizer that interacts with said incident beam of light prior to said wire grid polarization beamsplitter, or is a polarization analyzer that follows said wire grid polarization beamsplitter,

beamsplitter, and receives said modulated light, and further removes any residual unmodulated light from said modulated light.

90. (New) A modulation optical system as in claim 89 wherein said modulator is a liquid crystal display device.

91. (New) A modulation optical system as in claim 89 wherein said liquid crystal display device is comprised of vertically aligned liquid crystal molecules.

92. (New) A modulation optical system as in claim 89 wherein said reflective spatial light modulator receives said polarized beam of light having a first polarization, as was transmitted through said wire grid polarization beamsplitter.

93. (New) A modulation optical system as in claim 89 wherein said reflective spatial light modulator receives said polarized beam of light having a second polarization, as was reflected from said wire grid polarization beamsplitter.

94. (New) A modulation optical system for providing high contrast modulation of an incident light beam comprising:

(a) a prepolarizer for pre-polarizing said beam of light to provide a polarized beam of light;

(b) a wire grid polarization beamsplitter for receiving said polarized beam of light, for transmitting said polarized beam of light having a first polarization, and for reflecting said polarized beam of light having a second polarization orthogonal to said first polarization, wherein subwavelength wires on said wire grid polarization beamsplitter face a reflective spatial light modulator;

(c) wherein said reflective spatial light modulator receives said polarized beam of light, having either a first polarization or a second polarization, and selectively modulates said polarized beam of light to encode data

thereon, providing both modulated light and unmodulated light which differ in polarization;

(d) wherein said reflective spatial light modulator reflects back both said modulated light and said unmodulated light to said wire grid polarization beamsplitter;

(e) wherein a polarization compensator, located between said wire grid polarization beamsplitter and said reflective liquid crystal device, is provided for conditioning oblique and skew light rays;

(f) wherein said wire grid polarization beamsplitter separates said modulated light from said unmodulated light; and

(g) a polarization analyzer receives said modulated light, and which further removes any residual unmodulated light from said modulated light.

95. (New) A modulation optical system as in claim 94 wherein said liquid crystal display device is comprised of vertically aligned liquid crystal molecules.

96. (New) A modulation optical system as in claim 94 wherein said prepolarizer comprises a wire grid polarizer.

97. (New) A modulation optical system as in claim 94 wherein said polarization analyzer comprises a wire grid polarizer.

98. (New) A modulation optical system as in claim 94 wherein said reflective spatial light modulator receives said polarized beam of light having a first polarization, as was transmitted through said wire grid polarization beamsplitter.

99. (New) A modulation optical system as in claim 94 wherein said reflective spatial light modulator receives said polarized beam of light having a second polarization, as was reflected from said wire grid polarization beamsplitter.

Respectfully submitted,



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